

186. *Sitta canadensis*. RED-BELLIED NUTHATCH.— A common resident in the Hills.
187. *Penthestes atricapillus septentrionalis*. LONG-TAILED CHICKADEE.* — Abundant breeder.
188. *Myadestes townsendi*. TOWNSEND SOLITAIRE.— Taken by Hayden; abundant breeder about Custer Peak; young seen.
189. *Hylocichla mustelina*. WOOD THRUSH.— Common breeder at Fort Pierre (Hayden).
190. *Hylocichla aliciae*. GRAY-CHEEKED THRUSH.— Black Hills, 1857 (Hayden).
191. *Hylocichla ustulata swainsoni*. OLIVE-BACKED THRUSH.— Rare migrant (Sweet).
192. *Merula migratoria*. ROBIN.*— Rare summer visitant, except in a few foot-hill towns.
193. *Sialia sialis*. BLUEBIRD.— Nests at Rapid City. Common in summer (Sweet).
194. *Sialia currucoides*. MOUNTAIN BLUEBIRD.*— Very abundant (Grinnell). Only a few seen, in the Hills.

BARROW'S GOLDEN-EYE IN MASSACHUSETTS.

BY WILLIAM BREWSTER.

It is never very pleasant to admit mistakes that one has made, however pardonable they may appear. If the fact of their commission can be established only by elaborate argument, backed by evidence not perhaps wholly conclusive, the necessity for confession is doubly hard to face. Yet it is to precisely such a task as this that I now find myself committed. I came near undertaking it as far back as 1880 but I was not then prepared to discuss the matter effectively and it was afterwards forgotten. Now that it has again been brought to my attention I shall deal with it as briefly as possible.

Many years ago I reported in the 'American Naturalist'¹ that "an adult female" Golden-eye "pronounced by Prof. Baird" to be "unquestionably *B. Icelandica*" had come into my possession "in the flesh from Cape Cod, December 7th, 1871" and that during

¹ Vol. VI, No. 5, May, 1872, pp. 306, 307.

the following winter I had "seen numbers of females and two fine adult males" of this species "in the Boston markets, most of them shot within state limits."

Our markets teemed with Golden-eyes that winter and I devoted a good deal of time to studying and comparing them. The game dealers said that most of them came from Cape Cod, but I learned afterwards that Montreal and Quebec were also rather frequent sources of supply; a fact which now leads me to doubt if any of the birds I saw in the markets at that time were certainly killed in Massachusetts, although the female that Prof. Baird examined was probably sent to me directly from Cape Cod as the wording of my published statement indicates. One of the adult males — still in my collection — was at first confidently believed to be a Massachusetts bird but on its present label, written in 1880, and in a catalogue entry, made that same year, the words "Cape Cod" are followed by a question mark. This specimen is a typical example of *islandica* as, no doubt, was the other male referred to in my record although I have now no distinct recollection of the latter, nor of what became of it.

Of the hundreds of female Golden-eyes which I saw in the markets in the winter of 1871–1872 a small proportion (not exceeding five per cent, if I remember rightly) differed from the others in having more or less orange or bright yellow on the bill (usually on the culmen just behind the nail) and an unbroken band of dull black dividing the white on the wing. Thinking that the birds thus marked might be Barrow's Golden-eyes I forwarded the head and wings of one of them to Prof. Baird. In a letter dated at Washington on December 13, 1871, he writes: "As far as I can judge by what you have just sent me of the remains, your bird is the female *Bucephala Icelandica*. Our series of this is not very good, but I have little if any doubt of the correctness of this identification. Let me know if you wish me to return the head. If not I will make a skeleton of it." A week or two later I sent him the skin of the female afterwards recorded in the 'American Naturalist' as having been "obtained from Cape Cod, December 7th." Concerning it he wrote on December 29, 1871, as follows: "The Golden-eyed Duck is, I think, unquestionably, the *Icelandica*, agreeing very well with the typical specimen in our collection; although the

orange spot [on the bill] appears to be common for this species, it is not entirely peculiar to it, since other kinds (*sic*) frequently possess it."

During the period when Prof. Baird was most actively engaged in studying and writing about North American birds many of them were represented in collections — even those of our larger museums, such as the Smithsonian Institution — by only a very few specimens and these, perhaps, too ill supplied with data, or in too poor condition to be of much value for scientific purposes. Hence he often had to deal with difficult problems in ornithology without the aid (now considered so indispensable) of adequate material for study and comparison. But his acumen in detecting slight or obscure characters and differences was so remarkable, and his judgment in deciding as to their value and signification so nearly unerring, that he made few positive mistakes, while most of his published opinions and deductions have so stood the test of time that they appear not less sound and convincing now than they did thirty or forty years ago. He was not infallible, however, and in respect to my Golden-eyes I fear he was at least partly in error. Unfortunately, neither of the specimens he saw is now available for examination. He probably kept the head but if so it does not seem to be in the Smithsonian Institution, for Dr. Richmond writes me under date of December 30, 1908: "I have searched our records and those in the osteological collection, and find only one head mentioned that may belong to the case referred to in your letter. This is a head catalogued by Mr. Ridgway in Nov., 1883, as '*Clangula americana* ♂ ad.,' the locality and donor said to be unknown. . . . I cannot find any record of this specimen having been catalogued between 1871 and 1872, or of any specimen received from you before about 1879."

What became of the skin I am unable to say definitely but I think it remained in my possession until 1880 when it may have been discarded with a number of other birds which I gave away or burned just before making a catalogue of my collection, in which this Golden-eye was not entered. Of course I should have kept it because of the fact that it had served as the basis of a published record, after having been identified by Prof. Baird, but it was in poor condition and before parting with it I had become satisfied

that it was not a Barrow's Golden-eye. Moreover, I then had—and have still, for that matter — other specimens almost exactly like it and I continue to see them in our markets. In my opinion all such birds should be referred to *americana*, despite the fact that some of them appear to approach rather closely to *islandica*.

The points of differences between the female of *islandica* and that of *americana* are still involved in no little doubt or obscurity. Few ornithologists seem to have given them much personal attention, and I know of but two whose published statements concerning them appear to have been based on a careful study of any considerable number of specimens. One of the authors is Mr. Ridgway. In Volume II of the 'Water Birds of North America,' published in 1884, he says (on page 42) that the females of the two species are "so much alike that, with the series at our command (about twenty specimens, including six unquestionably referable to *C. islandica*), we must acknowledge our inability to give infallible points of distinction. The examples which are known to represent *C. islandica* differ from the positively determined females of *C. glaucion* [*i. e.*, *americana*] in the following respects: (1) The color of the head and upper half of the neck is considerably darker, being a rich sepia- or snuff brown, rather than grayish brown; (2) the greater wing-coverts are distinctly tipped with black, forming a conspicuous dusky stripe between the two larger white areas of the wing, which in *C. glaucion* are (usually, at least) merged into one continuous space. Further than these we find no distinction, while indeed some examples are so decidedly intermediate in both respects as to render it quite uncertain to which species they belong. Of the two characters named, however, the color of the head is far the more constant, and may, perhaps, be found quite distinctive." To all this I fully agree although I doubt if the characters here discussed by Mr. Ridgway equal in value or constancy certain others of which he makes no mention in this connection.

The other author to whom I have just alluded is the late Dr. J. Bernard Gilpin. In a paper entitled 'The Golden Eyes, or Garrots in Nova Scotia,'¹ published more than thirty years ago, he has much of interest to say about the species *americana* and

¹ Transactions Nova Scotia Inst. Sci., Vol. IV, 1878, pp. 390-403.

islandica. He seems to have been familiar with them, living as well as dead, for he was accustomed to watch them swimming in pairs and small flocks in Digby Basin and to handle freshly killed specimens, apparently in some numbers. Hence his testimony regarding them is of importance and entitled to careful consideration. Without doubt it may be relied on as far as it relates to the adult males of the two species, concerning which he discovered that the trachea, bronchi and lower larynx of the one are very unlike those of the other; the difference being illustrated by a plate that accompanies his article. But his impressions respecting the females and immature males are, in my opinion, somewhat less trustworthy; indeed I cannot help suspecting that some of them were based on wrong identification of specimens. Thus he asserts — or at least plainly implies — that the female of *americana* is quite as likely as that of *islandica* to “have nearly the whole of the bill” yellow — which is contrary to my experience — and he is quite positive that the female of *islandica* sometimes possesses an entirely black bill — which I have never known to be the case. Nor can I agree with him in thinking “that the yellow is only as it were a transient mark of the young, and that the adults of both species have dark bills.” I should be equally unwilling to support the reverse of this proposition, however, since the presence or absence of bright yellow does not seem to me to be often if ever dependent on age. Dr. Gilpin’s final conclusions are given on page 398 of his paper in the following quaint but expressive language:— “Here then we have two species, in the male easily distinguished by colour, but in the female by colour impossible, and our only guide is that the Rocky Mountain bird [*islandica*], though larger, has a shorter and higher bill, and in consequence of this height a difference in the shape of the forehead, where the feathers meet the culmen, tolerably well enough shown in the male adults, but more obscurely in the females and young — all being in the recent state, and in the dried or mounted specimens scarcely discernible.” To this he adds (on page 399), “in the females as regards colour no difference can be found.”

Although Dr. Gilpin’s conclusions may be sound enough in the main I do not consider them perfectly satisfactory in so far as they apply to female birds. In dealing with these he was evidently

accustomed to consider only the size or shape of the bill as of importance for purposes of identification; Mr. Ridgway seems to have relied at first (*i. e.*, in 1884) solely on the color of the head and neck and on the presence or absence of a dark bar on the wing, as marks of distinction; but in both editions (published respectively in 1887 and 1896) of his 'Manual of North American Birds' he recognized additional characters by indicating briefly, without discussion, that in Barrow's Golden-eye the bill is shorter and more abruptly tapered, with a broader nail, and the gray band on the chest of the female broader, and usually deeper, than in the American Golden-eye. My own impression of the matter, based on the examination of a large number of American Golden-eye and of no less than eleven undoubted specimens¹ of Barrow's Golden-eye now in my collection, is that typical females of *islandica* are quite as unlike those of *americana* in color and markings as in the shape and proportions of the bill, and that the two birds may best be distinguished from one another by the following characters, most of which have been noted, of course, by previous authors.

Clangula islandica. Bill comparatively short and abruptly tapered, laterally as well as vertically; sometimes almost wholly yellow in color (except on the nail and cutting edges which are always (?) black), invariably (?) with more or less yellow on both mandibles near the tip. Brown of head and neck rich, dark sepia, often tinged with blackish or (slightly) with purplish. Ashy on chest broad and pronounced. Greater wing-covert usually (but not invariably) tipped with black which, as a rule, forms a practically continuous dark band dividing the white into two distinct areas.

Clangula clangula americana. Bill longer and less abruptly tapered, especially laterally, the reduction in width towards the tip being much less noticeable; both mandibles often unicolored, or nearly so, the color being for the most part brown varying with age (?) from light wood brown to very dark brown or blackish. Brown of head and neck lighter and commonly hair-brown or grayish umber. Ashy band on chest narrower and paler, sometimes almost wanting. White patch on wing often immaculate or only imperfectly divided by a line of disconnected dark spots on the tips of the greater coverts.

The decided reduction in the width of the bill of *islandica* near its tip is, I think, the best of all the distinctive characters, afforded

¹ With a single exception, all these birds were taken on the coast of Maine, in the months of January, February, March and April.

by the female of this species. The bill of *americana*, when viewed from above, has a very different appearance; being *much more typically duck-like* in shape. It rarely, if ever, shows any pure yellow except near the tip where there is sometimes a narrow bar of this color on the culmen, just behind the nail, with perhaps some indication of a corresponding marking on the lower mandible, also. The dark bar on the wing is much less often lacking in *islandica* than in *americana* but as it is not infrequently quite as conspicuous and perfect in the latter as in the former it possesses no great value as a diagnostic character.

Many writers have asserted that *islandica* is the larger of the two forms, especially with respect to its wing measurements. There is perhaps some average difference of this kind although the smallest bird of either kind in my collection is an adult female of *islandica* taken in June among the mountains of British Columbia. As to the difference in the width of the nail at the tip of the bill, to which Mr. Ridgway has called attention, I am unable to verify it.

If I were asked to restate the characters just formulated, placing them in the order of their relative importance, I should arrange them thus: (1) Shape and proportions of bill; (2) coloring of head and neck; (3) coloring of bill; (4) presence or absence of continuous dark band across white wing patch. When all the marks of distinction which I have attributed to one or the other species are possessed in *combination* by a single bird the identity of the specimen is open to no doubt, but unfortunately there is perhaps no one of them all which is invariably confined to the form of which it is ordinarily characteristic. Indeed, one cannot handle any considerable number of female Golden-eyes killed in winter in New England without coming upon specimens which are far from typical, while some of these are likely to be so nearly "half-way" intermediates between *americana* and *islandica* that their definite reference to either form is impracticable, except on purely arbitrary grounds. I used to suspect that such birds might be of hybrid origin but I now incline to the opinion that they represent nothing more nor less than a curiously one-sided transfer or borrowing of external characters which are not always constant. They fail, however, as far as I have observed, to furnish series perfectly connecting *americana* with *islandica*. Oddly enough the unfilled gap

lies not midway between the two species, as might be expected, but much the nearer to *islandica*. In other words *americana* seems to approach *islandica* very closely through birds possessing certain characteristics of the latter species, whereas *islandica* exhibits little or no tendency to appropriate any of the characters of *americana*. Or, to put the case still more definitely, if somewhat figuratively, *americana* may be said to have forged towards *islandica* a closely-welded chain, quite continuous up to the point where it abruptly terminates, just before reaching the narrowly circumscribed limits of the area occupied by *islandica*, a comparatively stable and immutable form. For although the birds which supply the links of this chain grade perfectly into typical *americana* on the one hand they do not seem ever to pass a definitely fixed point in their approaches to *islandica* on the other. Yet collectively they exhibit, more or less unmistakably, nearly all the characteristics of ultra-typical specimens of *islandica*. Because of these conditions it has been my custom, when identifying female Golden-eyes taken in America, to refer all specimens not typical— or nearly so — of *islandica* to *americana*. This practise may be somewhat arbitrary but it is at least consistent with the facts in the case, as I understand them. It is possible, of course, that my evidence is incomplete and that the missing links in the chain of approaching females to which I have called attention may yet be found. But if, as I am inclined to believe, they do not exist, how can their absence be explained? Before attempting to answer this question it may be well for me to say a few words about the variations that I have noted in male Golden-eyes of both kinds.

There is never any difficulty in separating the adult males of the two species. They are, indeed, so strikingly unlike that one can distinguish them almost at a glance, without direct comparison. The male of *islandica* seems subject to remarkably little variation of any obvious kind. The male of *americana* is less uniformly characterized. It occasionally has a bill shaped much like that of *islandica* or white cheek markings so elongated vertically as to somewhat resemble those of that species. Dr. Gilpin asserts that "both males have the violet wash in the green of the head" but I have never known it to be shown conspicuously by *americana*, nor to be other than conspicuous and widespread on the head of

islandica. All the other external characters appear to be quite constant. Perhaps the most important as well as interesting of them all is one which the late Dr. J. A. Jeffries was the first to bring to the notice of ornithologists. It concerns certain of the white and black scapular feathers. With these, as Dr. Jeffries says,¹ "the terminal part of the white breaks off, and leaves the black edges projecting beyond" in Barrow's Golden-eye, whereas "this breakage does not take place in the common Golden-eye." This curious difference has been shown with absolute uniformity in all the specimens that I have ever examined.

That the males, as well as the females, of *americana* tend to vary in the direction of *islandica*, whereas both sexes of the latter are almost wholly free from variability of a corresponding kind, is interesting and perhaps, also, significant — if we could but grasp the underlying meaning of the fact. The approaches shown by the adult males are, however, much less frequent and pronounced than those afforded by the females. Indeed, I have seen only a very few males of *americana* which were not typical in every essential particular, and I have yet to meet with one which could fairly be regarded as a "half-way" intermediate between that species and *islandica*.

Since the adult male of Barrow's Golden-eye differs from that of the common Golden-eye, not only in respect to pronounced and stable external character but in internal structure, also (as Dr. Gilpin has shown), it would seem to be beyond question that the two forms are specifically distinct. Nevertheless they may interbreed occasionally, as Ducks of other and less closely allied kinds are known to do. If the intermediate birds to which I have alluded were of both sexes and of infrequent occurrence it might be possible to regard them as hybrids or the progeny of hybrids and to explain their various peculiarities by the application of one or another of Mendel's interesting laws — as has been done so convincingly of late in case of certain aberrant Warblers belonging to the genus *Helminthophila*. But as they appear to be invariably females and by no means uncommon, and as interbreeding of whatever kind is not known to ever produce offspring exclusively of one sex — at

¹ Bull. N. O. C., V, No. 3, July, 1880, p. 189.

least among birds — it appears improbable, to say the least, that hybridity can have had much if anything to do with the present case. The theory of mutation, so much discussed of late, is perhaps worth considering in this connection for it may throw light on some of our present difficulties. It has been tested, I believe, chiefly if not solely by observations made on domesticated animals and cultivated plants. Some of these are said to have furnished proofs that elementary, yet strongly characterized and apparently stable, species may originate from other and more variable ones by what are termed “jumps” or “steps.” A striking example of this is given by Darwin who, it is now claimed, recognized some of the principles of mutation although he did not deal with them under that name. He says that “japanned” or “black-shouldered” Peacocks have appeared “suddenly in flocks of the common kind” and that they “propagate their kind quite truly,” constituting what is considered by good authority to be a “distinct and natural species.” Even more remarkable is his statement that they tend “at all times and in many places to reappear,” by which he means, apparently, that a long “jump” which gives immediate birth to a well marked form breeding true to type may be followed at rather frequent intervals by precisely similar “jumps,” with identically the same results. More recent observations, relating mainly to carefully controlled or fostered plants and animals, have seemed to confirm this surprising fact and to show further that there are species which throw off, thus abruptly, not only strongly characterized and constant forms, but also great numbers of less pronounced and stable ones. In other words mutations which yield no very important or lasting results appear to occur oftener than those which result in the establishment of what are known as good species.

Since these wonderful things are thought to take place among animals and plants under domestication why may they not happen — if less often — in untrammelled Nature? It has been inferred that they do so happen but the fact remains to be proved, I believe. If we might assume, as a mere tentative proposition, that *Clangula islandica* is a simple mutant of *americana*, resulting from a long “step” (or succession of “steps”) taken in the more or less remote

¹ Animals and Plants Under Domestication, New York, 2d ed., 1876, Vol. I, pp. 306, 307.

past, it would follow, as a matter of course, that the interesting approaches to the former species shown by certain aberrant specimens of the latter afford evidence that "steps" shorter and less decisive than that (or those) which produced *islandica* have been and continue to be, made by *americana*, in the same general direction.

Thus far, indeed, the so-called laws of mutation might be made to fit well with the facts and conditions of the case which we are considering. But if I understand these laws correctly they would fail to explain why the representatives of *americana* which approach *islandica* at all closely are invariably females. Nor do I know of any other theory which is not similarly disappointing in this respect.

In their 'Birds of Massachusetts' Messrs. Howe and Allen mention (on page 55) a male Barrow's Golden-eye "labeled January 27, 1879, in the mounted collection of the Boston Society of Natural History, which appears unrecorded" and which is supposed to have been taken at Ipswich. There would seem to be little or no doubt that this specimen is the same as that referred to briefly in one of my note books under date of "January 27, 1869" as "an adult ♂ shot at Ipswich, Mass. by E. C. Greenwood. Purchased of him by Dr. Brewer for B. S. N. H." If I am right in so thinking, the record is open to grave suspicion if, indeed, it be not quite valueless, for although Greenwood is not known to have resorted to dishonest practises of any kind during the earlier years of his career as a professional collector, he was convicted in 1884 of having supplied false data with a number of mounted birds which he had just sold to the curator of a certain museum in eastern Massachusetts.¹

Mr. Job has reported² that "a fine male" Barrow's Golden-eye sent to a Mr. Wood "to be mounted, in the autumn of (about) 1885," was shot in Plymouth. Dr. Townsend³ considers it "probable that a beautiful male in the collection of the Lawrence Natural History Society," said to have been "shot near Lynn, about 1877," is one and the same bird with that referred to by the late Dr. J. A. Jeffries in a manuscript "note written in March, 1878," as "shot off

¹ See Brewster, Auk I, No. 3, July, 1884, pp. 295-297.

² H. K. Job, Auk, XIII, No. 3, July, 1896, p. 202.

³ C. W. Townsend. Birds of Essex County, Mass. Memoirs Nutt. Orn. Club, III, 1905, p. 139.

Nahant this winter on authority of Tufts." No statement so brief could well be more satisfactorily attested; for A. M. Tufts, the Lynn taxidermist who died ten or a dozen years ago, was a perfectly reliable man and too familiar with both kinds of Golden-eyes to make any mistake with regard to a male of either species. Nor would there seem to be reason to question the Plymouth record, since Mr. Job puts faith in it.

There is still another Massachusetts record,¹ relating to Nantucket, where a male Barrow's Golden-eye "in the adult plumage" is said to have been taken on December 17, 1906. As this specimen was "destroyed in ignorance," before being seen by any one except a few native gunners, its subsequent identification on hearsay evidence, merely, cannot be regarded with much confidence.

The Museum of Comparative Zoölogy has just received by gift, from Mr. Matthew Luce of Boston, a fully adult male of Barrow's Golden-eye mounted by the M. Abbott Frazar Company. Concerning this bird Mr. Luce writes me, under date of December 22, 1908, as follows: "I shot the Barrow's Golden-eye on Friday morning, the 11th of December [1908] in the marsh known as Nauset Bay at Eastham, Mass. There were two others with this bird, a female which I secured, and another male, but whether the other male was a Barrow's or not, I could not tell. The female, I took to be a common Whistler. There was a light southwest wind with an occasional flurry of snow. I had decoys out and got a number of the ordinary Whistlers besides this Barrow's."

I feel peculiarly indebted to Mr. Luce for his kindness in thus enabling me to couple with the admission of errors committed in my youth respecting Barrow's Golden-eyes, this definite and obviously authentic record of the recent occurrence of the species in Massachusetts.

¹ Auk, XXV, No. 2, April, 1908, p. 217.